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IS 10678 (1983): Data sheet for design and selection of vacuum producer [MED 7: Material Handling Systems and Equipment]

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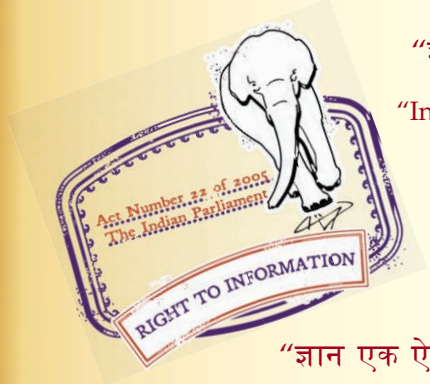

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"Knowledge is such a treasure which cannot be stolen"

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(Reaffirmed 1999)

Indian Standard

DATA SHEET FOR DESIGN/SELECTION OF VACUUM PRODUCER

[Ref : Doc : EDC 84 (3526)]
Bulk Handling Equipment Sectional Committee, EDC 84; Hydraulic Conveying Equipment Subcommittee, EDC 84 : 3

1. Scope — Lays down the data required for design/selection of vacuum producers.

2. Data Sheet

2.1 *General*

a) Service _____

b) Type of vacuum producer _____ Steam/Hydraulic

c) Designation _____ Steam ejector/Hydrovactor

d) Location _____

2.2 *Steam Ejector*

2.2.1 *Operating conditions*

a) Motive fluid pressure _____ kPa

b) Motive fluid temperature _____ °C

c) Entrained fluid _____

d) Entrained fluid composition _____

e) Suction pressure _____ kPa

f) Entrained fluid density _____ kg/m³

g) Ejector load _____ kg/h

h) Entrained fluid molecular mass/specific heat ratio _____

j) Discharge pressure _____ kPa

k) Discharge velocity _____ m/s

m) Number of stages _____

n) Number of ejectors per stage _____

p) Inter-stage condenser _____ Barometric/Surface

q) Inter-stage condenser cooling water/condensate pressure _____ kPa

r) Inter-stage condenser cooling water/condensate temperature _____ °C

s) Quantity of motive fluid required _____ kg/h

t) Quantity of cooling water/condensate required _____ kg/h

u) Maximum sound level _____ dB(A)

Adopted 31 October 1983 | © January 1984, ISI | Gr 2

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NEW DELHI 110002

2.2.2 *Design conditions*

Sl No.	Parameter	Units	First Stage	Second Stage	Third Stage	Fourth Stage	Fifth Stage
a)	*Ejector Load*	kg/h					
b)	i) Motive fluid consumption	kg/h					
	ii) Motive fluid pressure	kPa					
	iii) Motive fluid temperature	°C					
c)	*Motive Fluid Inlet Pipe and Flange Details*						
	i) Inlet size	mm					
	ii) Press class and facing of flange	—					
d)	*Suction Side*						
	i) Pressure of fluid	kPa					
	ii) Temperature of fluid	°C					
	iii) Size	mm					
	iv) Pressure class and facing of flange	—					
e)	*Discharge Side*						
	i) Pressure of mixture	kPa					
	ii) Temperature of mixture	°C					
	iii) Size	mm					
	iv) Pressure class and facing of flange	—					
f)	Cooling water/condensate consumption	kg/h					
g)	Cooling water/condensate temperature	°C					
h)	Barometric Condenser: Number of contact stages	—					
j)	Surface condenser: Outside tube area	m^2					

2.2.3 *Materials of construction*

Sl No.	Equipment	Material	Hardness
a)	*Steam Ejector*		
	i) Motive fluid chest		
	ii) Motive fluid nozzles		
	iii) Suction chamber		
	iv) Diffuser		
	v) Nozzle plate		
	vi) Inter-stage valve		
b)	*Barometric Condenser*		
	i) Shell		
	ii) Baffles		
	iii) Nozzles		
c)	*Water Removal Pump*		
	i) Casing		
	ii) Impeller		
	iii) Wearing ring		
	iv) Shaft		
d)	*Surface Condenser*		
	i) Shell		
	ii) Tube sheet		
	iii) Tubes		
	iv) Baffles		
	v) Water boxes and water cover		

2.3 *Hydrovactor*

2.3.1 *Operating conditions*

a) Capacity _____ t/h

b) Air flow rate at rated vacuum _____ m^3/h

c) Number of nozzles in hydrovactor _____

d) Diameter of each nozzle _____ mm

e) Velocity of air/entrained mixture at hydrovactor throat _____ m/s

2.3.2 *Design conditions*

a) Capacity of hydrovactor _____ t/h

b) Design vacuum at rated capacity _____

c) Quantity of water required _____ m^3/h

d) Pressure of water required at hydrovactor _____ kPa

e) Expected minimum service life

i) Throat _____

ii) Nozzles _____

2.3.3 *Materials of construction*

Sl No.	Equipment	Material	Hardness
a)	Inlet liner		
b)	Nozzle tips		
c)	Throat section		
d)	Tail piece		

2.4 *Data Common to Steam Ejector/Hydrovactor* _____

2.4.1 *Test results*

a) Hydrostatic test pressure _____ kPa

b) Pneumatic test pressure _____ kPa

c) Inspection by purchaser _____

2.4.2 *Manufacturer* _____

2.4.3 *Approximate masses*

a) Steam ejector/Hydrovactor _____ kg

b) Condensers _____ k

2.4.4 *Documents to be furnished*

a) Characteristic curve of vacuum producer _____

b) Dimensional drawing of vacuum producer with material of construction and hardness of various parts _____

EXPLANATORY NOTE

This Indian Standard lays down the data required for the selection/design of ejectors. This data sheet may be used by manufacturer and purchaser alike for giving details of the equipment manufactured by manufacturer or required by purchaser to the purchaser/manufacturer.

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